

REMARKS

I. SPECIFICATION

The Examiner has requested that a new title clearly indicative of the invention to which claims are directed be substituted for the existing title. Appropriate amendment has been made.

II. NEW CLAIMS

New claims 43-47 have been added by means of the foregoing amendment. Support for the new claims may be found in the specification in at least the following places:

Claim 43 – page 19, line 1;

Claim 44 – page 18, line 20;

Claim 45 – page 19, lines 8-11;

Claim 46 – page 19, lines 13-23; and

Claim 47 – page 18, lines 20-21; and page 19, lines 27-28.

III. CLAIM REJECTIONS – 35 U.S.C § 112

Claims 22-36 and 42 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. In particular the Examiner argues that the previously presented limitation “two different electroluminescent functionalities...the emission spectrum of the diode exhibit at least two intensity maxima” from claim 22 is vague and indefinite. This language has been replaced in claims 22, 25 and 26 with the following “... (an) electroluminescent active layer which provides for the simultaneous emission of at least two intensity maxima of different wavelengths

of light from the active layer..." Applicant respectfully submits that the foregoing amendment makes claim 22 and the claims which depend therefrom definite.

IV. CLAIM REJECTIONS – 35 U.S.C. § 102

Claims 22-36 and 42 stand rejected under 35 U.S.C. § 102(b) as anticipated by or obvious in view of Yu et al. (U.S. Patent Publication No. 2002/0017612). The Examiner alleges that Yu et al. (paragraph 0080 – paragraph 0112) discloses a light emitting diode (LED) comprising an organic electroluminescent compound. Applicant respectfully submits that the Examiner is misreading the Yu reference.

Yu et al. relates to a photodetector (a photodiode). See, for example, paragraph [0004] of the Yu reference. The photodiode of Yu is not an LED. The photodiode of Yu et al. is capable of producing a current in response to light impinging thereupon. Thus, the Yu device is substantially opposite to an LED (which generates photons when a current is applied).

The Examiner's concern that the previously claimed feature "that the emission spectrum exhibits at least two intensity maxima" is merely an intended use and therefore non-limiting is noted. Applicant respectfully submits that the amendment to claim 22 submitted herein addresses this concern. In addition, claim 22 has been amended to recite that the two different wavelengths be emitted simultaneously. This feature is not shown or suggested by Yu. Accordingly, the subject matter of claim 22 is distinguished from Yu et al. in at least two aspects, and thus clearly novel in view of this reference.

V. CLAIM REJECTIONS – 35 U.S.C. § 103

Claims 22-36 and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Burroughes (GB 2340304) or alternatively Hatwar (EP 1286569) in view of Capasso et al. (U.S. Patent No. 6,278,134). Applicant respectfully submits that the claims as amended are not obvious in view of the combination of these prior art references for the reasons set forth in detail below.

Claim 22 has been amended herein to include the element of the LED providing for the simultaneous emission of at least two different wavelength maximums from the active layer and that the detector in optical communication with the LED have a separate signal and reference channel. Support for these elements may be found in the international application as published at page 3, lines 5-8, page 4, line 29, page 5, line 10, and in other places found throughout the specification, figures and claims as filed. Applicant respectfully submits that these elements which are added by the present amendment serve to distinguish the prior art relied upon by the Examiner.

Capasso et al. is the only reference cited by the Examiner which includes a detector. It does not appear from Fig. 7 of the Capasso et al. reference or the text describing Fig. 7 at column 9, line 30 of the Capasso patent that the Capasso detector includes separate signal and reference channels which may operate simultaneously. The skilled person would have no reason to configure the Cappasso detector to include separate signal and reference channels since Capasso et al. does not disclose a light source which can simultaneously emit two wavelengths. In particular, Capasso et al. discloses a cascade semiconductor laser capable of operation under either a positive or negative applied bias voltage. Thus the Capasso device is bi-directional and may emit laser energy at either a $\lambda+$ or $\lambda-$. See, for example, column 2, line 49 of the Capasso et

al. reference. Since it is impossible to apply both a positive bias supply voltage and a negative bias supply voltage to the Capasso laser simultaneously, it is reasonable to conclude that the Capasso device is incapable of simultaneously producing output energy at two separate wavelengths. Thus, it is apparent that the two wavelengths emitted by the Capasso device would be emitted at an alternating manner thus eliminating any practical use for a detector having two separate simultaneously operative channels.

The claimed apparatus which may simultaneously emit at least two channels which are separately detected by the signal and reference channels of the detector makes the system more robust against variations in external factors, such as temperature, humidity, and changes of the environment, etc. (See, for example, page 2, lines 7-19 of the international application as published for examples of external factors). This is a considerable advantage over the device of Capasso et al..

In addition, Capasso et al. does not disclose an LED, let alone an LED having an emission spectrum comprising at least two maxima (which can be emitted simultaneously).

It is possible that the organic LEDs of the Burroughes and Hatwar references do show devices which emit light having two wavelength separated intensity maxima. It is indisputable, however, that these references do not teach or suggest an associated detector. The skilled person would not find any suggestion in Burroughes or Hatwar to replace the non-simultaneous alternating wavelength source of Capasso et al. with a multi-wavelength LED because neither Burroughes nor Hatwar suggest in any way that the LEDs shown therein would be suitable for the implementation of a detector system, nor is it suggested that this would offer any advantage, for example, improved robustness.

In summary, Applicant respectfully submits that the obviousness rejection of claims 22-36 and 42 in view of Burroughes or Hatwar and Capasso must fail because these references do not teach or reasonably show the following claimed elements:

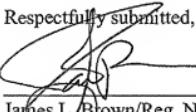
- A detection system featuring an LED source which provides for the simultaneous emission of two wavelength separated intensity maxima in combination with a detector having a signal and a separate reference channel.
- A detection system featuring a detector having a signal and separate reference channel of any type.

Accordingly, Applicant respectfully submits that the claims as pending are allowable over the prior art references relied upon by the Examiner.

If it would be helpful to obtain favorable consideration of this case, the Examiner is encouraged to call and discuss this case with the undersigned.

This constitutes a request for any needed extension of time and an authorization to charge all fees therefore to deposit account No. 19-5117, if not otherwise specifically requested. The undersigned hereby authorizes the charge of any fees created by the filing of this document or any deficiency of fees submitted herewith to be charged to deposit account No. 19-5117.

Respectfully submitted,



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